

REMARKS

Claims 1, 4-6 and 9 are pending. Claims 2, 3, 7-8 and 10 are cancelled. Claim 1 is currently amended along the lines as discussed in the telephonic Interview Summary of August 25, where the Examiner agreed to reconsider the claims if amended to reflect the rotation of the iron ore. The Examiner stated that another search will be required on her part. Currently amended claim 1 claims a type of inventory rotation process in combination with an aging process, in contrast to the cited prior art, which teaches a process of creating a reserve inventory with no stipulated order of use.

Claims 1-2 and 4-10 stand rejected under 35 U.S.C.103(a).

Claim 1 is currently amended to include the limitation of claim 2, and the step of “reclaiming the solid lump feed material stored for at least one month”. The amendment is fully supported by the specification on page 8, lines 16-17. It was argued in previous remarks that the step of “storing for a predetermined time” infers an inventory rotation process as this phrasing implies that the material is no longer stored, hence it is reclaimed from storage. The specification reads that the stored lump ore feed is “reclaimed”. The step of “reclaiming” taken with the step of “storing” are a process where the inventory of ore is rotated after a time period of “at least one month”. The rotation and aging process is in some ways not dissimilar from aging wine or whisky. Like aging wine or whisky, there is a minimum time period that the lump ore feed must be stored before it is reclaimed. Claim 1 reads that the purpose of the storage period is to provide time to allow the release of internal stresses. In a conventional stockpile, ore is at the center of the stockpile and it is older than ore on the perimeter of the pile, and when the ore in the stockpile is used, at least some of the ore on the perimeter is used first. In the invention, the ore is stored until it has aged at least one month before it is reclaimed, so that if the ore is saved as a conventional stockpile the ore on the perimeter would have to be aged at least one month, and ore in the center of the pile would be aged at least slightly longer, where the storage is in an open atmosphere. In contrast, PBK Engineering Ltd (1992) teaches

holding stockpiles of ore for 4 days. The size of the stockpile depends on how much material the steel manufacturing plant needs to have on hand in the event that the mine can't produce. Stockpiling typically connotes creating a reserve, not a process of rotating inventory with a minimum time before use, and for that reason, claim 1 has been further amended deleting "stockpile". The stockpiling taught the PBK Engineering Ltd reference is a process of creating a reserve inventory, it is not a process of inventory rotation with a minimum time before use. With a stockpile, the order of use is typically at least partially "last in first out", because the first material "in" is near the center of the stockpile. Once a sufficient reserve is established, the mine, as taught by the PBK Engineering Ltd reference would no longer keep adding to the stockpile, as the stockpile serves as a hedge / reserve against the mine failing to deliver ore. The reserve need only be consumed if the mine shuts down for a period of time long enough to keep the steel making plant running. Typically, the ore is used in a matter of days or hours. In any case, no minimum time before use is taught by the PBK Engineering Ltd reference. The Examiner has also cited a 1908 reference (The Metallurgy of Iron and Steel, Hill Publishing Co, NY). The 1908 reference teaches that ice in a canal two miles long prevents iron ore from being delivered for 3 months. The Examiner asserts that the stockpile would have to be at least 3 months old. The Examiner is only partially correct. Some material in the winter stockpile would have to be at 3 months old if the plant operates at the same capacity year around, but about a third of the stockpile may be consumed in the first month, and all of this material would be less than a month old. Therefore, for 10 months of the year the material could be less than 1 month old. If the stockpile is kept as a pure emergency reserve inventory (as the canal may not be iced over every year), then some of the material could be several years old, as it may be left over from previous years. The reference doesn't teach whether the material is reclaimed after a predetermined time, nor a minimum time before use. Like PBK Engineering Ltd reference, the stockpile in the 1908 (Metallurgy of Iron and Steel) reference is a reserve to be used in case the mine or the ship cannot deliver. The 1908 reference teaches that the canal is only two miles long, so for most of the year the plant could get material that is only a few days old, depending on how long it takes to load and unload the ship. On page 21, the 1908 reference teaches that the ore is unloaded in 4.5 hours. On receipt of shipment the steel making plant can use the ore in any order. The 1908 reference does not

teach a minimum time before use. Applicants respectfully assert that currently amended Claim 1 is now in condition for allowance. The Examiner stated in the Interview Summary that an additional search will be required as Applicants are claiming a process that constitutes rotation of the inventory, where the process has a minimum time before use. To the Examiner's credit, between the PBK Engineering Ltd reference and the 1908 reference the subject matter appears to have already been comprehensively searched. Furthermore, in the non final office action, the Applicants argued that the "storing" step taught inventory rotation, so an additional search appears to not be necessary as all the other issues that were raised pertained to claims that are now cancelled. The discovery by the Applicants of the beneficial results of using an inventory rotation process of sedimentary iron ore lump, with a minimum time before use, as a process of minimizing fines has heretofore not been reported, otherwise Applicants would not have been so moved to file a patent application on the invention. The search to date covers a span of almost 100 years, and therefore the invention is prima facie not obvious in light of the breadth and comprehensiveness of the search and the uniqueness of Applicants' claim. The rejection of claim 1 is respectfully overcome.

Claims 2, 4, 7-8 and 1-10 are cancelled.

Claims 4-6 and 9 depend from independent claim 1, and derive novelty in part from their dependency. As to claim 4, Applicants disagree with the Examiner that a storage bin is equivalent to cyclones and rotary kilns. Both apparatus keep the material therein in motion, while a storage bin maintains the material therein at rest. Furthermore, Applicants' and Meissner's exhaust gases are from a DRI process, while Stephens' exhaust gases are from oxidizing steps that burn the sulfur out of the ore, therein generating sulfur dioxide (col. 2, line 67). Applicants' exhaust gases can be combined with cooling air 28, as necessary (page 8, line 25). Meissner teaches that the waste gases can indirectly be used to heat the reformer. Applicants claim in claim 4 that the waste gases are introduced to the storage bin. A couple of problems exist with the Examiner's argument. First and foremost, why would the Applicants want to add sulfur dioxide to the storage bin? This would merely lower the quality of the iron ore, and, combined with cooling air 28, create more emission

gases that need to be cleaned up. Secondly, Meissner teaches that the waste gases can be used indirectly via a heat exchanger to heat the reformer. Meissner does not teach a process where waste gases, especially those laden with sulfur dioxide, ever come into direct contact with the iron ore, as shown in Stephens' steps 18 and 30. Meissner teaches away from the Examiner's combination, as it is obviously not useful. The rejections of claims 4 and 6 are therefore respectfully overcome.

Since the amendments to the claims do not add more claims than previously paid for, no additional fee is required for the claims. Fees (\$790) for the RCE are enclosed.

In view of the foregoing amendment and these remarks, this Application is now believed to be in condition for allowance and such favorable action is respectfully requested on behalf of Applicants.

Respectfully submitted,



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